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Aging and Housing Equity

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Chapter 12
Aging and Housing Equity

Steven F. Venti and David A. Wise

Housing equity is the most important asset of many older Americans. In principle, these assets could be used to support consumption after retirement, but earlier studies have concluded that unless there is an alteration in family status, there is little if any reduction in housing equity as people age.[1] Indeed, our prior research concluded that even among movers, there was little change in home equity. We did find, however, that people with large home equity relative to other welath were more likely to reduce home equity when they moved, and those with low housing equity relative to other wealth were more likely to increase home equity when they moved. Large reductions in home equity were typically associated with the death of a spouse or with other precipitating shocks. Our earlier analyses relied on data from the Retirement History Survey (RHS) and covered persons age 58–73 interviewed over the 1970s. Merrill (1984) also analyzed RHS data and reached conclusions consistent with ours. Feinstein and McFadden (1989) base their analysis on information from the Panel Survey of Income Dynamics (PSID), a survey that includes households with heads over age 75. Their findings were also consistent with our earlier findings. In a somewhat later analysis, Venti and Wise (1991) used data from the Survey of Income and Program Participation (SIPP) and again obtained findings consistent with prior studies. Sheiner and Weil (1993) find some decline in home equity at older ages, associated with shocks to family status and health; their results appear to us to be consistent with the prior studies.

Despite the seeming unanimity of opinion, some alternative views have recently begun to emerge. Recently, Megbolugbe et al. (1997), using PSID data, found that:

1. Homeownership rates remain high until age 70, after which a noticeable decline begins.
2. Each year, 97 percent of homeowners remain owners, and 91 percent of renters remain renters. When they move, renters are more likely

than owners to switch tenure, but renters are more likely to move, so on net there is a trend to renting.
3. When they move, owners aged 55–64 are more likely to trade down, owners aged 65–74 are more likely to trade up, and those 75+ are as likely to trade up as down.
4. Liquidity constraints tend not to influence homeowning patterns. In fact, asset-rich but income-poor households tend to trade up, in contrast to earlier findings.

Another study bucking the mainstream view was by Hurd (1999), who examined two waves of the Asset and Health Dynamics Among the Oldest Old (AHEAD) survey. He concluded: "Downsizing of home owning is the norm, and prior contradictory findings were due to inadequate data."

In this chapter we once again examine patterns of change in home equity as peple age, using a new dataset. The key question we ask is whether housing wealth is typically used to support general consumption in old age. We examine particularly attention to older households, between the age of 70 and 90, using data from the AHEAD.

To the extent that housing equity is treated just like financial assets to support consumption after retirement, it might be considered as a substitute for financial wealth and perhaps treated interchangeably with financial wealth in considering the wellbeing of the elderly. On the other hand, if housing wealth is not drawn down with age, it may be more realistic to consider nonhousing consumption derived mainly from accumulated financial wealth, including social security and other annuities. Analysts considering how well households are prepared for retirement have treated home equity in different ways. Some analysts include housing wealth in the set of assets that can be used to finance retirement (Moore and Mitchell 2000; CBO 1993). Others exclude housing wealth in making a determination (Bernheim, 1992). Engen et al. (1999) and Gustman and Steinmeier (1999) bound their estimates at 0 and 100 percent of housing equity.

Empirical Approach: Tracing Home Equity over the Life Cycle

We consider first the relationship between age and housing equity over the life cycle, drawing on data from the Survey of Income and Program Participation (SIPP). We then turn to more detailed analysis for older households, using the AHEAD data. In particular we consider the effect of precipitating shocks. We have given considerable attention to the possibility of possible misreporting and errors in the AHEAD data, yet we are left with substantial noise in changes in housing wealth over time, particularly when persons move. Indeed, the reduction in housing wealth calculated from the difference between self-reported owner-occupied home value before sale

and the reported sale value after moving may exaggerate to a considerable degree the actual reduction in housing equity. There is substantial evidence that respondents tend to overestimate the value of the house in which they are living.

Findings Using SIPP Evidence

The SIPP provides housing equity values obtained from home value and mortgage debt in seven years: 1984, 1985, 1987, 1988, 1991, 1993 and 1995.[2] From the random sample of cross-section surveys in each of these years we have created cohort data. For example, to trace the home equity of people age 26 in 1984, we begin with the average home equity of persons age 26 based on the random sample of persons age 26 in the 1984 survey. Next, we obtain the average equity of people age 27 from the 1985 survey, age 29 in the 1987 survey, and so forth. We identify cohorts by their age in the 1984 survey. We do this for 17 cohorts defined by the age of the cohort in the first year of the data. In fact, to obtain more precise estimates of housing equity, the data for a given cohort like age 26 is the average of data for a three-year age interval (25, 26, and 27). We do this for cohorts, age 26, 29, . . . , 71, 74. All cohorts are followed until age 80 in the SIPP.[3]

The fraction of two-person SIPP households who own a home, by cohort, appears in Figure 1. These patterns can be affected by differential mortality: for example, suppose that homeowners were less likely to die at any age than renters. Then the ownership rate rises with age simply because the owners lived and the renters died. To account for this possibility, we have made a mortality correction to the data (explained in the appendix), and report these mortality-corrected data for two-person households. To make the figure easier to read, only selected cohorts are reported. The lesson of the figure is that home ownership does not decline with age, at least through age 79. In addition, there appear to be no important cohort effects until about age 70. That is, there are no large jumps when the data for one cohort end and the data for another cohort begin. For the oldest ages, however, there do appear to be noticeable cohort effects. Home ownership is lower for the last two cohorts. Yet as with the other cohorts, there is no evident decline in ownership as these cohorts age.

Figure 2 reflects the result of "smoothing" SIPP data by regressing home ownership on age, age squared, and age cubed, together with cohort effects. The functional form is

$$\text{Own} = \alpha + \beta_1 A + \beta_2 A^2 + \beta_3 A^3 + \sum_{\text{cohort}} \delta_i C_i,$$

where i indexes cohorts and δ_i indicates the ith cohort effect. In this model, the sum of the δ_is is zero. In Figure 2, the "average" relationship between

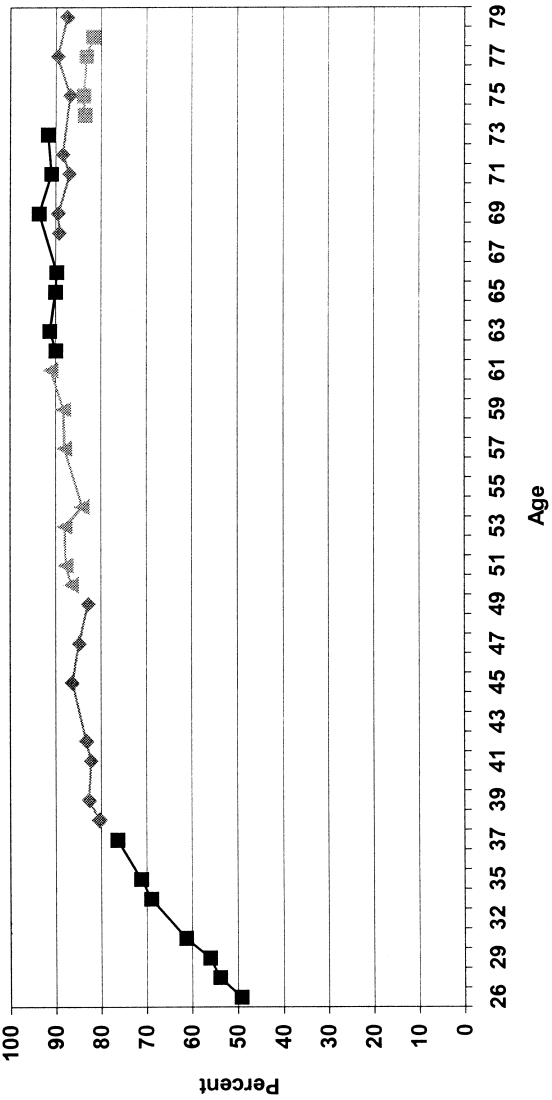

Figure 1. Percent owning homes among two-person households (mortality adjusted data from SIPP). Source: Authors' calculations from SIPP data.

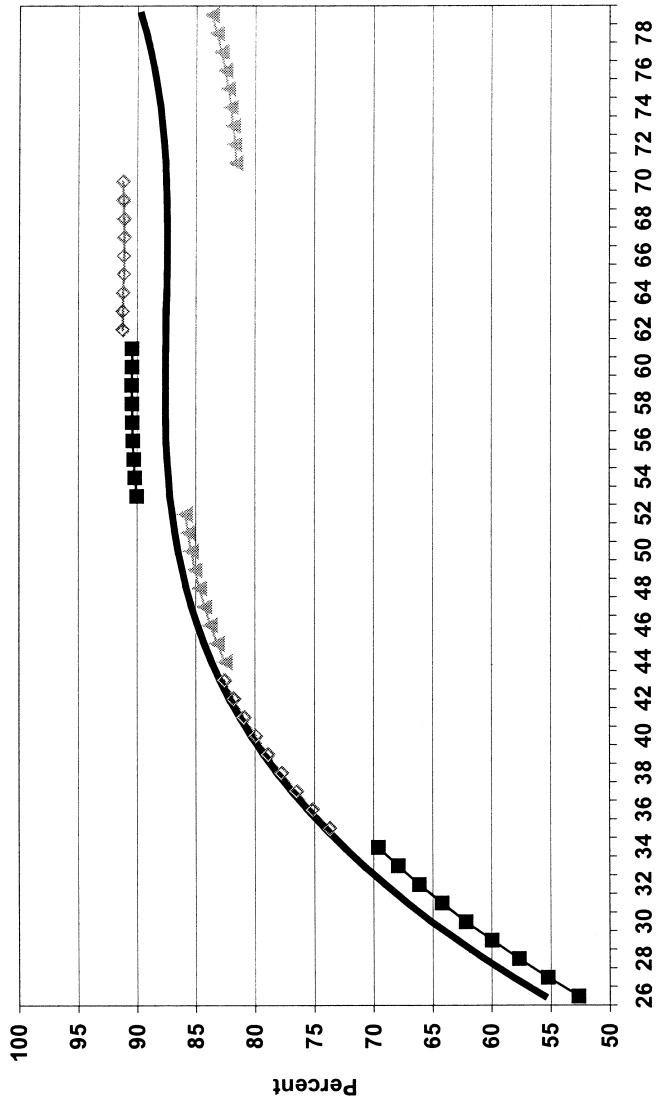

Figure 2. Percent owning homes among two-person households (mortality adjusted data from SIPP, smoothed). Source: Authors' calculations from SIPP data.

age and ownership, based on the age parameters in the above equation, is shown by the heavy solid line. The cohort effects are represented by the deviations of individual cohort lines from the overall average. These more formal estimates indicate that both the oldest and the youngest cohorts are less likely than the average to own, while the middle-aged cohorts are more likely to own.

Home ownership data for one-person SIPP households are shown in Figure 3. Again there is no apparent decline in ownership with age. Indeed, the data seem to show some increase in ownership at the oldest ages.

Home Equity

Home equity values reported by two-person families are shown in Figure 4. These are in current dollars and thus reflect the influence of rising home prices over the 1984 to 1995 period, nor are the data corrected for differential mortality. The same data, now in 1995 dollars and corrected for mortality, appear in Figure 5. Within a cohort, there is no decline in home equity as the cohort ages; there may even be some increase in equity within a cohort between age 65–80. There do appear to be some cohort effects in equity, as evidenced by the jumps when the data for one cohort ends and the data for another cohort begins.

To illustrate more clearly the cohort effects, we have fit the cohort data with a regression equation just like the one above, now replacing home ownership with home equity:

$$\text{Equity} = \alpha + \beta_1 A + \beta_2 A^2 + \beta_3 A^3 + \sum_{\text{cohort}} \delta_i C_i.$$

The results for selected cohorts are shown in Figure 6 and for all SIPP cohorts in Figure 7. It is clear that both older cohorts — those over age 70 in 1984 — and younger cohorts — those younger than 36 in 1984 — have lower home equity than the average, while the middle-aged cohorts have higher equity than the average. For example, consider cohorts who attained age 32 in successively later calendar years: The cohort that was age 32 in 1984 had more home equity than the cohort aged 32 in 1988, and the later cohort had more home equity than the cohort that attained age 32 in 1995. We have not analyzed the reason for the cohort effects in any systematic way, although differences in housing price changes over time may explain the cohort effects.[4]

Figure 8 shows the similar self-reported equity data for one-person households, and Figure 9 shows the data corrected for mortality and inflation. As with the two-person households, there seems to be no decline in equity through age 78.

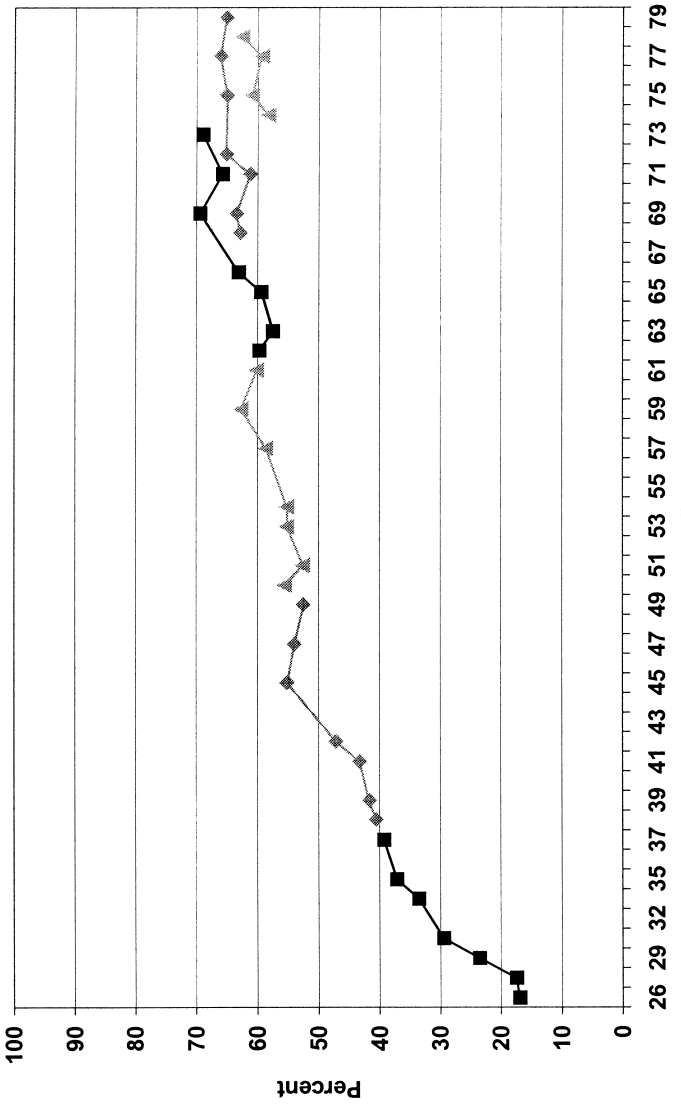

Figure 3. Percent owning homes among one-person households (mortality adjusted data from SIPP). Source: Authors' calculations from SIPP data.

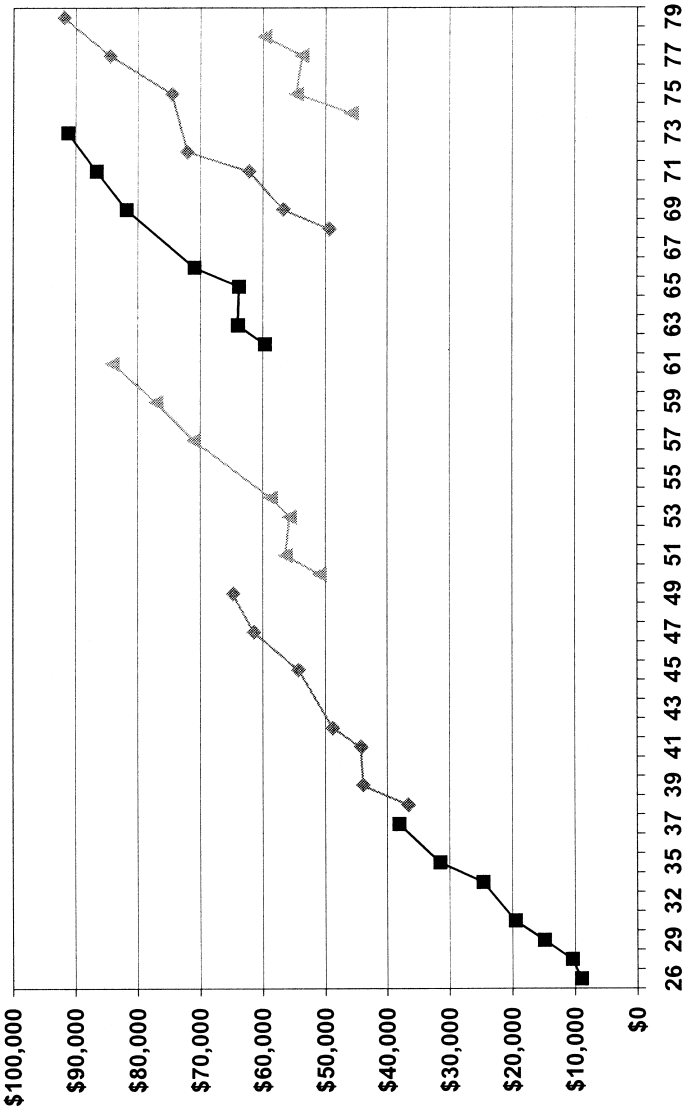

Figure 4. Home equity for two-person households (data from SIPP). Source: Authors' calculations from SIPP data.

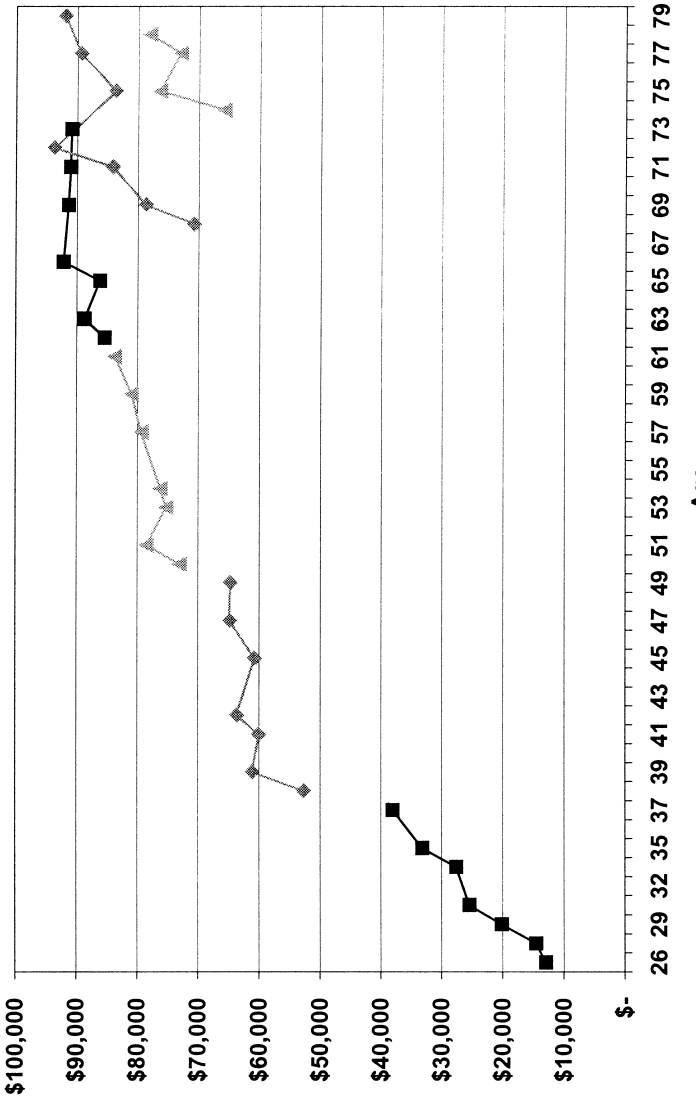

Figure 5. Home equity for two-person households (mortality and CPI-adjusted data from SIPP). Source: Authors' calculations from SIPP data.

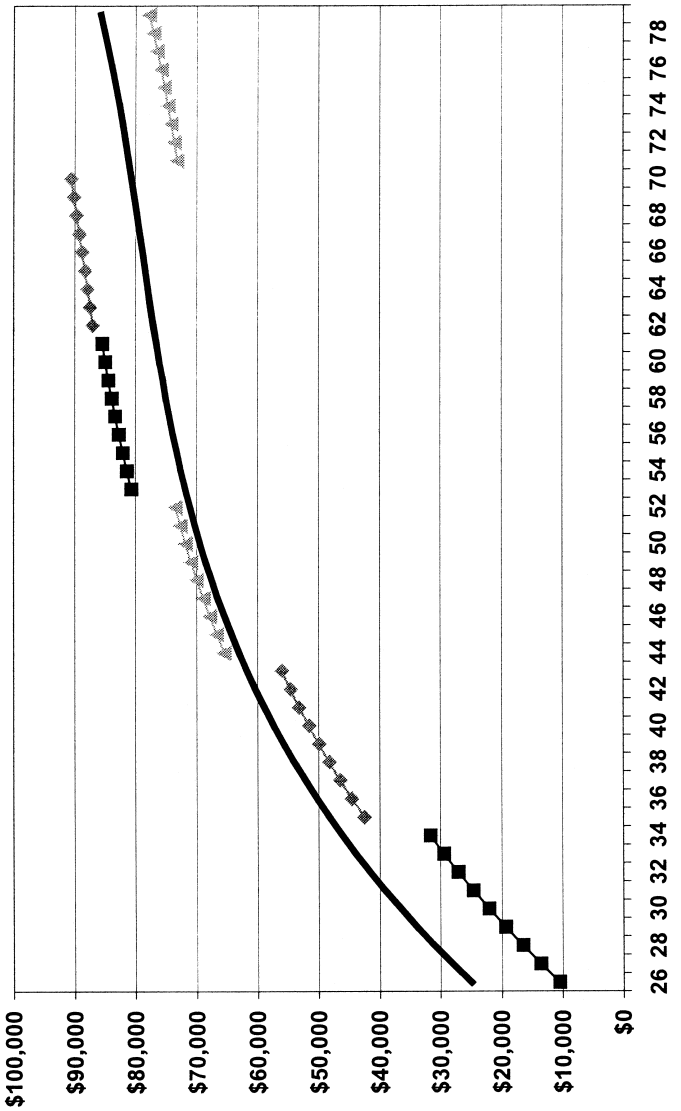

Figure 6. Home equity for two-person households (smoothed data from SIPP, selected cohorts). Source: Authors' calculations from SIPP data.

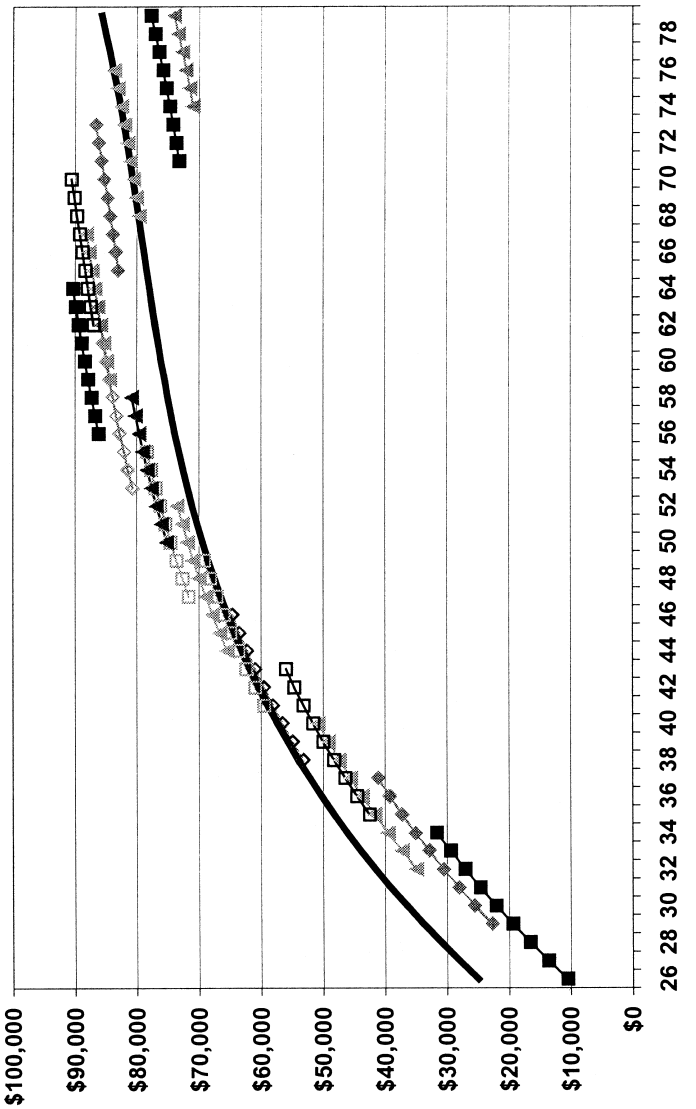

Figure 7. Home equity for two-person households (smoothed data from SIPP, all cohorts). Source: Authors' calculations from SIPP data.

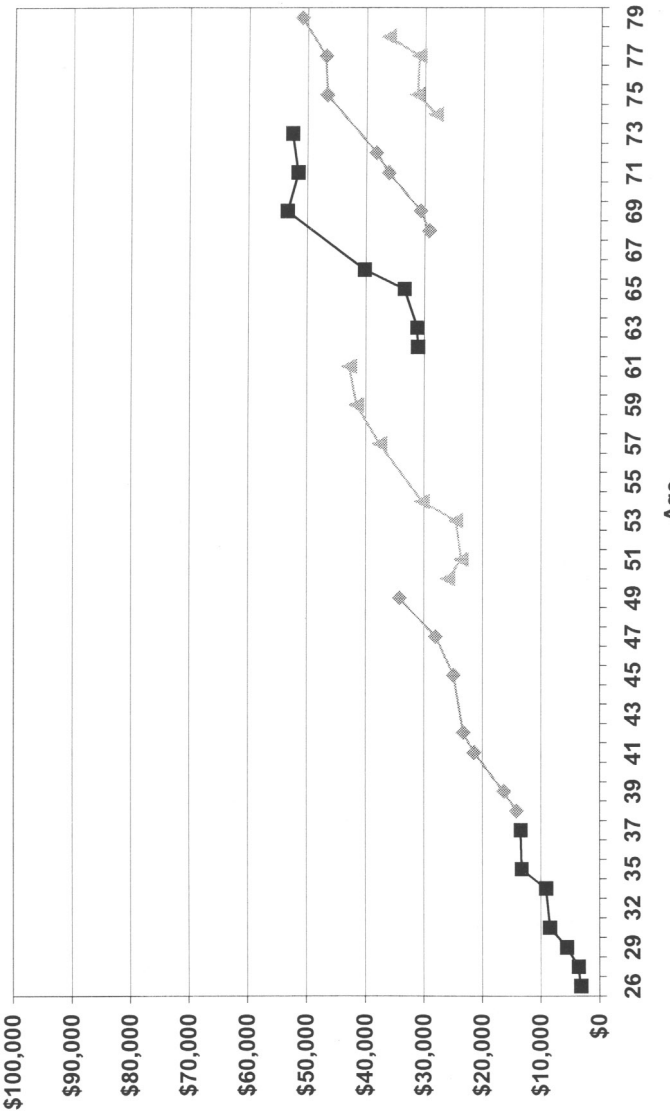

Figure 8. Home equity for one-person households (data from SIPP). Source: Authors' calculations from SIPP data.

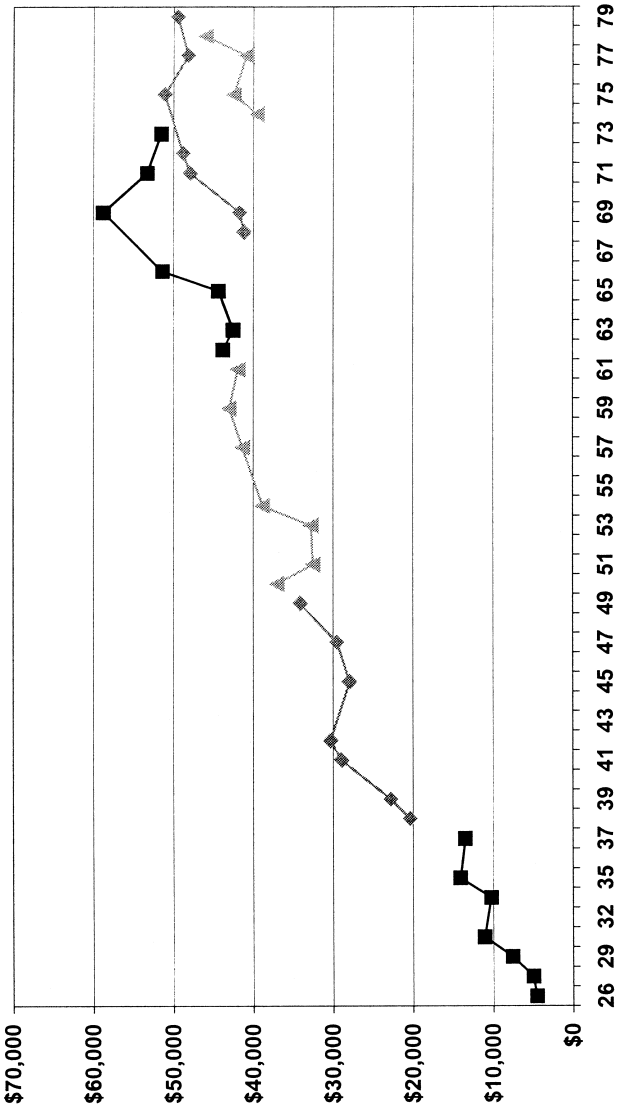

Figure 9. Home equity for one-person households (mortality and CPI-adjusted data from SIPP). Source: Authors' calculations from SIPP data.

Findings Using AHEAD Data

To understand trends in home equity at older ages, we turn to an examination of the AHEAD data. Once again we consider home ownership cohort data first and then home *equity* cohort data. Then we consider the effect of precipitating shocks strongly related to change in home equity at older ages.

Homeownership

AHEAD is a panel data file that follows the same families over time. We use data from wave 1 (1993) and wave 2 (1995) of this survey, along with a resurvey in 1998, wave 4 of the Health and Retirement Study [HRS]. Thus we have three data points spanning five years for each household. To obtain cohort data comparable to the SIPP, we construct cohorts data by grouping AHEAD households in two-year age intervals. These constructed cohorts are the basis for our cohort evidence shown next.

Homeownership cohort data for two-person families appear in Figure 10, which covers ages from 70 to 90. A comparison of these with the SIPP data in Figure 1 shows that the ownership percent for two-person families in their early 70s is about 90 percent in both sources, though the AHEAD results suggest a modest decline in ownership among persons in their 70s. Nevertheless, the within-cohort data do not show a decline in ownership at older ages, though there are cohort effects, with lower ownership among the oldest cohorts.

Analogous information for one-person households appear in Figure 11. For these households, the within-cohort data do suggest a decline in ownership as persons age. But they also suggest a positive cohort effect, with higher ownership among households in their 80s than among those in their late 70s.

Home Equity

CPI-adjusted home equity cohort information for two-person households is shown in Figure 12, and here there is a rather consistent decline with age in housing equity with no substantial cohort effects. (The anomalous age 82 cohort data are apparently the result of a small sample size.) Equity patterns for one-person households are shown in Figure 13 and also show consistent decline with age, and without noticeable cohort effects with the possible exception of the oldest cohort.

When we amalgamate the patterns observed in the SIPP and AHEAD surveys for two-person households (Figures 5 and 12), our tentative conclusion is that home equity seems to peak in the early 60s and remain more or less constant until the early 70s. Thereafter, there may be some modest decline in home equity. Among one-person households, the evidence

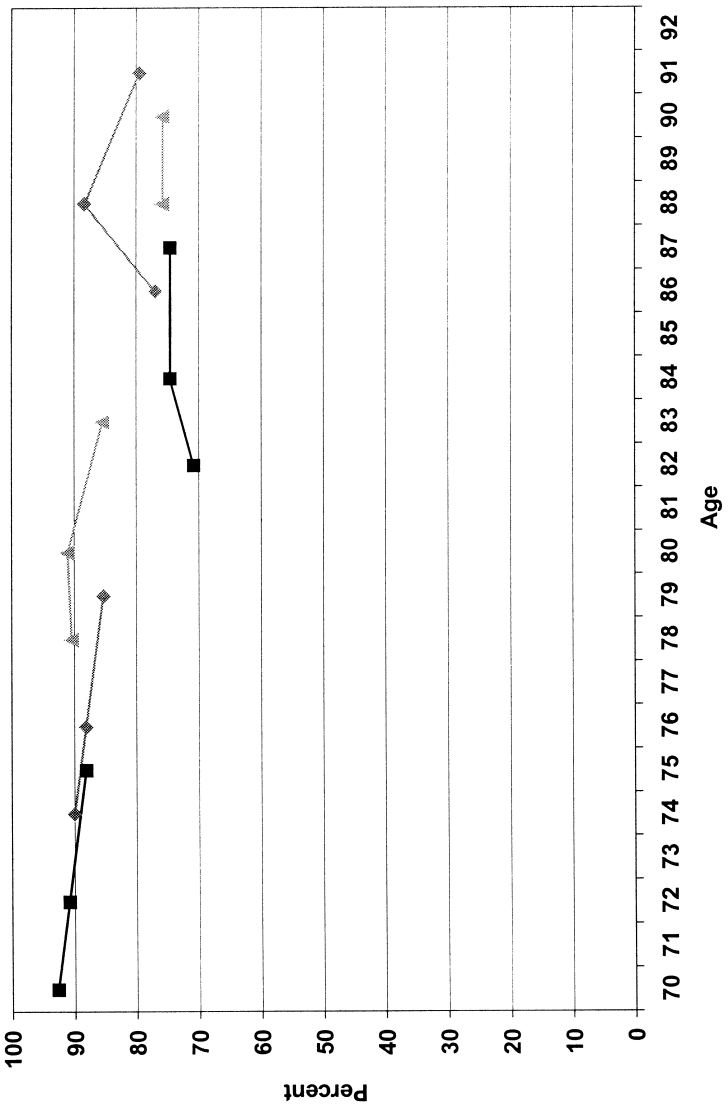

Figure 10. Percent owning homes for two-person households (data from AHEAD). Source: authors' calculations from SIPP data.

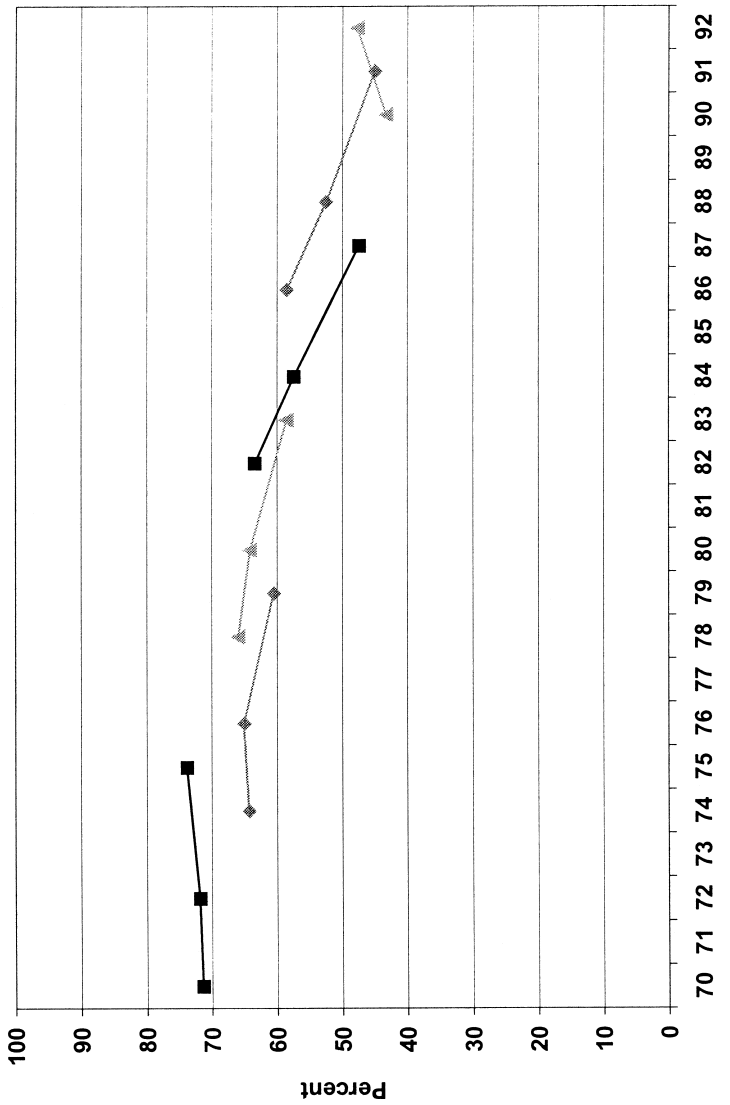

Figure 11. Percent owning homes for one-person households (data from AHEAD). Source: authors' calculations from SIPP data.

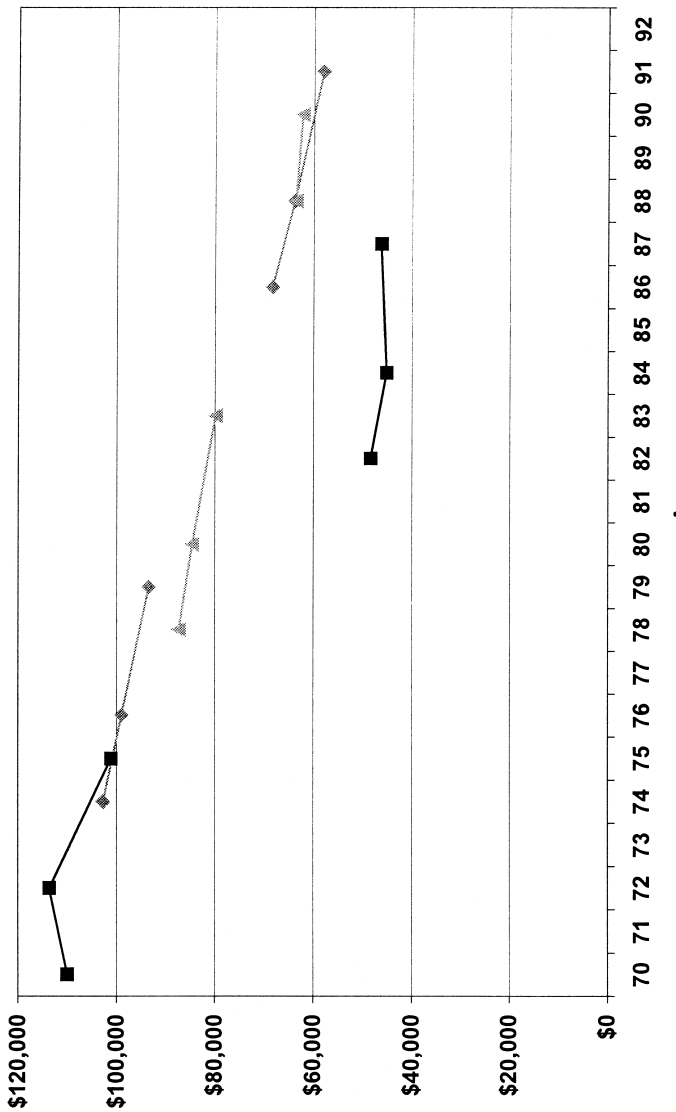

Figure 12. Home equity for two-person households (CPI-adjusted data from AHEAD). Source: Authors' calculations from SIPP data.

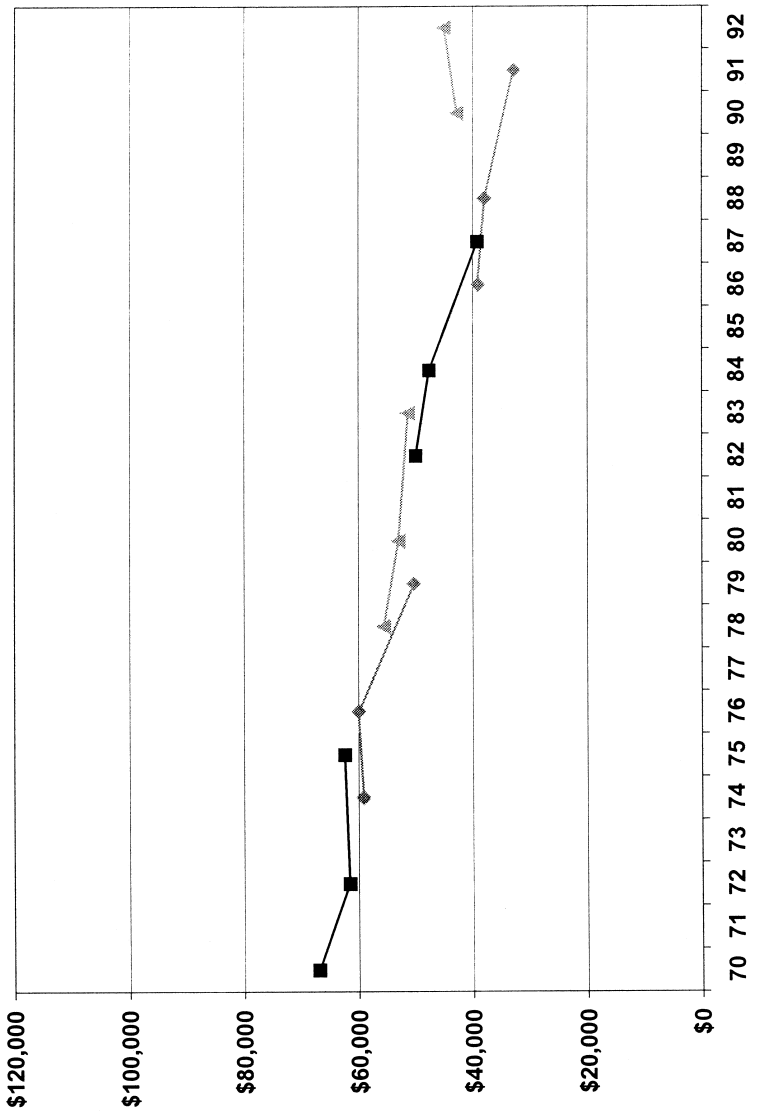

Figure 13. Home equity for one-person households (CPI-adjusted data from AHEAD). Source: Authors' calculations from SIPP data.

(Figures 9 and 13) is similar, although the decline in the mid 70s seems larger and perhaps more consistent.

How Changes in Family Status Influence Home Equity in the AHEAD Data

We begin by exploring change in home ownership, by initial ownership status and by change in family status, again considering two- and one-person households separately.

We focus on changes in ownership during the 1993–95 interval and the 1995–98 interval. Data from both periods are combined in the table (separate analyses for each of the two intervals revealed similar results). Table 1 pertains to two-person families who were homeowners at the beginning of the periods.[5] Of all two-person households at the beginning of the period, 87.8 percent initially owned a home. Of those initial owners, most (94.7 percent) still owned a home by the end of the period, 1.9 percent were renting by the end of the period, and 3.5 percent had some other living arrangement. The remainder of the panel shows transitions by family status change. For example, consider two-person households at both the beginning and the end of the period (2 to 2 households, representing 82.4 percent of initial owners): of these, 96.6 percent still owned at the end of the period. Of the 96.6 percent, 95.6 percent were still in the same home, while 4.4 percent had moved to a different house. A small portion of the continuing homeowner two-person households (1.5 percent) was renting at the end of the period. Of this group, 25 percent still lived in the same house (perhaps the home had been transferred or sold to children).

The remainder of the panel shows outcomes for households that experienced shocks to family status. The rows labeled "2 to 1" pertain to households that had two members in the initial period and one member in the subsequent period. The rows labeled "2 to NH" include all households with two members in the initial period and at least one member in a nursing home in the subsequent period. Households that changed from two- to one-person were more likely to change ownership: 89.6 percent still owned at the period end, but 3.2 percent were renting, and 7.2 percent had some other living arrangement. Most of these were living with children. The third family status change is from a two-person household to a nursing home for at least one member of the household at the end of the interval. Of these households, only 66.3 percent were still owners, 4.5 percent rented, and 29.2 percent had another living arrangement. The implication of our data is that most moves are associated with a precipitating shock—the death of a spouse or with entry to a nursing home.

Changes in home equity that parallel the observed changes in home ownership are shown in detail in Table 2 (all values are in 1995 dollars). The last column shows the mean initial housing equity for each of the transition

TABLE 1. Changes in Family Status and Homeownership: AHEAD, 1993–95, 1995–98, Two-Person Households at Beginning of Interval Only

Initial Family Status and Change	*Subsequent Status*			*Initial Home Ownership and Family Status Change (%)*
	Own (%)	*Rent (%)*	*Other (%)*	
Own	94.7	1.9	3.5	87.8
2 to 2	96.6	1.5	1.9	82.4
Stay	95.6	25	78	
Move	4.4	75	22	
	(100)	(100)	(100)	
2 to 1	89.6	3.2	7.2	14.8
Stay	92.4	13.3	41.2	
Move	7.6	86.7	58.8	
	(100)	(100)	(100)	
2 to NH	66.3	4.5	29.2	2.8
Stay	89.8	25	0	
Move	10.2	75	100	
	(100)	(100)	(100)	(100)

Source: Authors' calculations from AHEAD and HRS data; data for one-person households available on request.
Note: NH means at least one member in nursing home.

TABLE 2. Mean Change in Home Equity by Initial Homeownership and Family Status Change: 1993–95, 1995–98, Two-Person Households at Beginning of Interval Only

Initial Family Status and Change	*Subsequent Status*				*Initial Home Equity*
	Own	*Rent*	*Other*	*All*	
Own				$−3603	$110524
2 to 2	$2026	$−73011	$−78488	−553	110165
Stay	2516	−61231	−82869	936	109456
Move	−9179	−77303	−57989	−26093	122371
2 to 1	−10233	−68639	−108295	−18633	113755
Stay	−10113	−18616	−124546	−13668	112622
Move	−11598	−71795	−97261	−48138	120393
2 to NH	4834	−49118	−102827	−24545	119020
Stay	4678	−79207	—	4005	112816
Move	6253	−45441	−102827	−75104	92461

Source: Authors' calculations from AHEAD and HRS data; data for one-person households available on request.
Note: — means not calculated due to small sample sizes.

groups. The average for all initial homeowners was $110,534, and the average decline over the two intervals was $3,603, accounting for about 15 percent of the average income of these households or about 3.4 percent of non-housing wealth.

The upper left portion of the table pertains to two-person households that owned a home at both the beginning and the end of the interval. On average, their housing equity increased by about $2,000. This was due to non-movers, since movers reduced their home equity by $9,179, or about 7.5 percent of their average initial home value. It must be recalled that the typical elderly household only moves once, so the reduction will likely be a one-time reduction. In evaluating the change in home values of movers, one might therefore use the change for "stayers" as a control, suggesting that in this case movers actually reduce home equity by $11,695. Nevertheless the reduction in home equity when people move may be exaggerated, as discussed below.

It is clear from this table that moves associated with changes in household structure do produce large changes in home equity. The data also show a reduction in the home equity of *stayers* who changed from a two- to a one-person household. It is possible that this change represents random misreporting, perhaps because the more knowledgeable respondent is no longer in the household. To reduce errors in data reporting, we therefore report medians in Table 3. (In addition of course, the medians may be different from the means simply because of the shape of the distributions of accurately reported data.) In some cases there are large differences between the medians and the means. For example, the median reduction for continuing owners who move is now $5,294, instead of almost twice that level ($9,179). The overall reduction for continuing two-person households who moved is $12,805, instead of $26,093. The reduction for all initial owners is $2,540, instead of $3,603.

Supporting the view that reporting errors may yield exaggerated reductions in housing equity when homeowners move, we cite previous studies that conclude that homeowners do tend to overestimate the value of their homes (cf Kiel and Zabel 1999). Hence the realized sale price of a home is typically more accurate but lower than the prior estimated home value, which would create a bias in our estimate of the *change* in housing equity among movers. We believe that both the AHEAD and HRS data show this tendency. In AHEAD2 (1995) and HRS4 (1998), widows were asked if they sold their homes since the last interview. If so, they were asked for the selling price. If the recent sale price was accurately reported as we expect, then the difference in the pre-sale estimated value and the post-sale price would be a measure of how much people "overestimate" housing values. The estimated home values and the reported sale prices for these widows suggest that home values are overstated by about 10 percent.[6] If this were more generally

TABLE 3. AHEAD, Median Change in Home Equity by Initial Homeownership and Family Status Change, 1993–95 and 1995–98, Two-Person Households at Beginning of Interval

Initial Family Status and Change	*Subsequent Status*				*Initial Home Equity*
	Own	*Rent*	*Other*	*All*	
Own				$−2540	$84488
2 to 2	$−1488	$−60000	$−58085	−2165	84488
Stay	−1402	−66534	−63366	−1963	84488
Move	−5294	−60000	−57029	−12805	100000
2 to 1	−490	−52805	−79207	−3984	80000
Stay	83	−12000	−68646	−841	80000
Move	−24589	−52805	−85000	−47212	85000
2 to NH	−7012	−47524	−84488	−12573	73297
Stay	−7012	−79207		−7012	75000
Move	4623	−47524	−84488	−50693	68646

Source: Authors' calculations from AHEAD and HRS data.
*This is the first panel from Appendix Table 3a.

true, our estimates of the reduction in home equity when a home is sold could be overestimated by as much as $10,000 to $12,000. Indeed, the reported reduction in mean housing equity when continuing two-person households move from one home to another (−$9,179) might fully attributable to exaggeration of the initial home value.

More Formal Estimates of Home Equity Change

We return to an examination of the change in home equity of movers and stayers, now considering movers as the "treatment" group and stayers as the "control" group. In this case, the home equity of stayers and movers at the beginning and at the end of the interval can be represented by a two-by-two matrix as follows:

	Beginning	End
Stayers	α	$\alpha + t$
Movers	α	$\alpha + t + m$

In this case, a difference-in-difference estimate $((\alpha + t + m - \alpha) - (\alpha + t - \alpha) = m)$, yields the "treatment" effect m. We can estimate m for all households combined, or for any subgroup, by

$$\Delta E = t + mM,$$

where t is a constant term and represents a time (inflation) effect and m is the additional effect for movers, with M a dummy variable identifying movers. The same equation can be estimated for any subgroup using the specification

$$\Delta E_k = (t_k + m_k M) * D_k,$$

where the dummy variables D represent different changes in family status and home ownership.

Estimates obtained in this way are shown in Table 4, which presents estimates only for people who were homeowners at the beginning of the interval. Data are presented by the subsequent (at the end of the interval) status of the initial homeowners. Ordinary least squares (OLS) estimates are shown in the left portion of the table, and the right portion shows median regression estimates. The latter estimates are not as sensitive as OLS estimates to reporting errors or other data outliers. In either case, the change in equity of movers is likely to be overestimated because of the inflated assessment of home values, as explained above.

For all two-person homeowner stayers, the change in home equity was not significantly different from zero based on the OLS estimates, but the median regression estimates suggest that home values fell somewhat during the intervals. For continuing homeowners, the OLS estimates show no statistically significant reduction in home equity, even for movers (with the exception of the anomaly for stayer households whose family status changed from two to one). The median results show some statistically significant, but smaller, declines. Accounting for the tendency to overestimate the value of owner-occupied housing, it is likely that continuing owners — even movers — had no decline in housing value, and they may have even increased housing equity. Recall that the results for widows above suggest that the method used here may exaggerate the decline in equity by $10,000–$12,000.

Important declines in home equity do occur among the 1.9 percent of two-person families who switch from owning to renting, and the 3.5 percent who switch from owning to some other living arrangement. First, none of the "mover" effects for those who switch from owning to renting or other are significantly different from zero. This suggests that there is no difference in the reduction of housing equity between movers and stayers. In the AHEAD data, of the nearly 25 percent of those reported to switch from owning to renting who have not moved from their initial home. Further, the housing equity of all the new renters who are "stayers" is reduced by around $60,000, as estimated by both OLS and median regression.

Given this apparent anomaly, we put little faith in the "control" method results reported here, but we do tentatively conclude that those who switch

TABLE 4. Estimates of Mover Equity Effect Using Stayers as "Control" Group, for Initial Homeowners, Two-Person Households, by Estimation Method

Subsequent ownership and family status change	*OLS estimates*				*Median regression estimates*			
	Stayers		*Movers*		*Stayers*		*Movers*	
	coef	*t-stat*	*coef*	*t-stat*	*coef*	*t-stat*	*coef*	*t-stat*
All	−807	0.2	−37217	2.8	−2012	4.6	−26832	17.5
Own at end of interval								
All	1020	0.3	−10085	0.6	−1534	3.3	−5710	2.8
2 to 2	2516	0.6	−11696	0.5	−1402	2.9	−3892	1.7
2 to 1	−10113	2.1	−1485	0.1	82.7	0.1	−24672	4.4
2 to N	4678	0.4	1574	0.1	−7012	2.7	11635	1.7
Rent at end of interval								
All	−58935	3.9	−14424	0.9	−66534	3.8	7534	0.4
2 to 2	−61231	3.6	−16072	0.8	−66534	3.5	6534	0.3
2 to 1	−18616	0.3	−53179	0.9	−12000	0.6	−40805	1.8
2 to N	−79207	1.8	33766	0.7				
Other at end of interval								
All	−92279	6.9	−536	0.0	−63366	8.2	−11634	1.1
2 to 2	−82869	5.7	24880	0.7	−6366	4.9	6337	0.2
2 to 1	−124546	3.8	27285	0.6	−68646	3.2	−16354	0.6
2 to N	−102827	5.9			−84488	5.5		

Source: Authors' calculations from AHEAD and HRS data. Data for 1-person households available on request.

from owning to renting release home equity worth about $60,000. In future analysis, we will seek to determine whether this change in home equity for "stayers" or "movers" shows up as an increase in other assets. Similar anomalies show up in the data for those who switch from owning a home to some other living arrangement. We therefore tentatively conclude that housing equity is reduced by somewhere between $60,000 and $100,000 for this group.

Comparable estimates for single persons not reported in detail here indicate that the housing equity of stayers was reduced by $2,000 to $4,000. Contrary to national data on home values, these estimates imply that home values declined over the survey intervals. On average, the 11 percent of one-person households who moved reduced housing equity by approximately $40,000 to $50,000. After accounting for the overestimation in the self-reported value of owner-occupied housing, these reductions would be less. Like two-person households, one-person households do not typically reduce home equity if they continue to own. Indeed, for continuing owners,

none of the move effects are significantly different from zero. As with two-person households there appear to be many anomalies in the data for those who report switching from homeowners to renting or to "other."

Conclusion and Discussion

In examining the change in home equity as families age, we find that, barring changes in household structure, elderly families are unlikely to discontinue home ownership: only about 5.4 percent of older two-person households owning a home change status over a 2½ year period. Even among movers who continue to own, we argue that there is essentially no reduction in mean home equity, allowing for what appears to be some exaggeration in self-reported home value Liquidation of home equity is more likely in the face of precipitating shocks, experienced by about 18 percent of older two-person families over 2½ year period. When a spouse dies, about 10 percent of these households discontinue home ownership; about 35 percent discontinue home ownership when a spouse enters a nursing home. The reduction in home equity among families that discontinue ownership is between $60,000 to $70,000. Mean home equity among all families that experience these shocks is over $110,000. Thus we conclude that home equity is typically not liquidated to support *general* nonhousing consumption needs. While the results presented here are based in large part on the home equity of families aged 70 and older, the results are much like those reported in earlier work based mainly on families under age 75.

These results suggest to us that when assessing whether families have saved enough to maintain their preretirement standard of living after retirement, housing equity should not be counted on to support general nonhousing consumption. Families apparently do not intend to save for retirement through investment in housing, as they might through a 401(k) plan or through some other financial form of saving. Rather our findings indicate that families purchase homes to provide an environment in which to live, even as they age through retirement years. It may be appropriate, nevertheless, to think of housing as a reserve or buffer that can be used in catastrophic circumstances that result in a change in household structure.

These conclusions correspond closely to the findings of a recent survey of older households (age 45+) sponsored by the AARP. Respondents were asked, "Do you agree with the statement: 'What I'd really like to do is stay in my current residence as long as possible.' " Over 75 percent of the 45–54-year-olds indicated that they "strongly agree" or "somewhat agree" with the statement, while 95 percent of those 75+ concurred. In addition, nearly 75 percent of the respondents age 55+ thought that their current residence is where they would always live. When asked what they would prefer to do if they eventually needed help caring for themselves, they responded over-

whelmingly that they preferred to remain in their current home, with assistance. As with our findings, the AARP survey also implies that most older households do not intend to liquidate housing equity to support retirement consumption.

Even in the face of precipitating shocks, when home equity is sometimes liquidated, we have yet to determine how the funds from the sale of a home are used. Do funds show up as an increase in financial assets? Are the assets transferred to children? How much is used to support general consumption? How much goes to nursing home expenses or costs associated with the death of a spouse? We will return to these issues in future research.

Appendix: Mortality Correction

Our analysis using the SIPP data is based on cohorts constructed from cross-section surveys. For example, the home ownership (or home equity) profile for a cohort is constructed by combining data for all households age A in the first survey year with data for households age $A + T$ from a survey T years later. If the likelihood of survival from A to $A+T$ is related to wealth, then these cohort profiles can be affected by differential mortality. We correct for this problem by reweighting the sample. Households are assigned an adjusted weight that is inversely related to the probability of survival from age A to age $A+T$.

Baseline estimates of these survival probabilities for one- and two-person households are obtained from waves 1 and 2 of AHEAD. A one-person household "survives" if that person is present in both waves 1 and 2. A two-person household "survives" if both members are present in the second wave. Survival probabilities are estimated from the AHEAD for five year age intervals and for housing equity quartiles. Older households and households with lower levels of housing wealth are less likely to survive. Since the AHEAD only includes households age 70 and over, published survival rates by age (from the NCHS) were used to extrapolate the AHEAD survival probabilities back to age 50.

The final step is to reweight the data. For each household observation of age A and housing equity quartile Q, the SIPP frequentcy weight is multiplied by the inverse of the cumulative survival probability. The survival probabilities are assumed to be one for households less than age 50. Thus households that are unlikely to survive are given higher weights. For each observation the probability of surviving to age A given equity quartile Q is where $s(a,a+1;Q)$ is the one-year survival rate for a household in equity quartile Q. For each household in each year the SIPP frequency weight is multiplied by the inverse of $S(A,Q)$:

$$S(A,Q) = \prod_{a=50}^{A} s(a,a+1:Q) \quad .$$

Notes

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1. See Venti and Wise (1989a, b, 1990), Merrill (1984), and Feinstein and McFadden (1989).

2. The survey panels and wave that provide the data are as follows:

Panel	Wave	Dates in Field	Panel	Wave	Dates in Field
1984	4	Sept–Dec 1984	1987	4	Feb–May 1988
1984	7	Sept–Dec 1985	1990	4	Feb–May 1991
1985	3	Sept–Dec 1985	1991	7	Feb–May 1993
1985	7	Jan–Apr 1987	1992	4	Feb–May 1993
1986	4	Jan–Apr 1987	1993	7	Feb–May 1995
1986	7	Jan–Apr 1988			

3. Data for households over age 80 are not used because age is top-coded at 80.

4. For example, referring to Figure 5, assume that homes are bought at age 35 on average, and consider the cohort that was age 50 in 1984 compared to the cohort that was age 38 in 1984. The older cohort bought homes in 1969 on average and would have gained from large home price increases in the 1970s. On the other hand, the younger cohort would have bought homes in 1981 on average and would have seen much lower increases in home equity during the 1980s and 1990s.

5. We have not made a correction for the different lengths of the periods. If people who own at the beginning of a period are equally likely to move in any of the next few years, then more people would have moved during the 2-year than during the 2-year period. Thus on average these are move rates over a 2½-year period.

6. A comparison of estimated home values and sale prices shows:

Survey Interval and Sample Size	Mean Estimate of Home Value in Initial Survey Year	Mean Reported Sale Price in Next Survey Year	Difference
1993–95 $N = 152$	90,512	80,816	−9,696
1995–98 $N = 178$	123,672	111,043	−12,630

References

AARP. 2000. *Fixing to Stay: A National Survey of Housing and Home Modification Issues.* Washington, D.C.: AARP.

Congressional Budget Office (CBO). 1993. *Baby Boomers in Retirement: An Early Perspective.* September. Washington, D.C.: USGPO.

Bernheim, B. Douglas. 1992. "Is the Baby Boom Generation Preparing Adequately for Retirement?" Technical Report. Princeton, N.J.: Merrill-Lynch.

Engen, Eric M., William G. Gale, and Cori E. Uccello. 1999. "The Adequacy of Retirement Saving." Brookings Papers on Economic Activity 2. 65–165.

Feinstein, Jonathan and Daniel McFadden. 1989. "The Dynamics of Housing De-

mand by the Elderly: Wealth, Cash Flow, and Demographic Effects," in *The Economics of Aging,* ed. David A. Wise. Chicago: University of Chicago Press.

Gustman, Alan L. and Thomas L. Steinmeier. 1999. "Effects of Pensions on Savings: Analysis with Data from the Health and Retirement Study." Carnegie-Rochester Conference Series on Public Policy 50. NBER Working Paper 6681. June.

Hurd, Michael D. 1999. "Portfolio Holdings by the Elderly." Mimeograph. December 1999.

Kiel, Katherine and Jeffrey Zabel. 1999. "The Accuracy of Owner-Provided House Values: The 1978–91 American Housing Survey." *Real Estate Economics* 27, 2: 263–98.

Megbolugbe, Isaac, Jarjisu Sa-Aadu, and James Shilling. 1997. "Oh, Yes, the Elderly Will Reduce Housing Equity Under the Right Circumstances." *Journal of Housing Research* 8, 1: 53–74.

Merrill, Sally R. 1984. "Home Equity and the Elderly." In *Retirement and Economic Behavior,* ed. Henry J. Aaron and Gary T. Burtless. Washington, D.C.: Brookings Institution. 197–225.

Moore, James F. and Olivia S. Mitchell. 2000. "Projected Retirement Wealth and Savings Adequacy in the Health and Retirement Study." In *Forecasting Retirement Needs and Retirement Wealth,* ed. Olivia S. Mitchell, P. Brett Hammond, and Anna M. Rappaport. Pension Research Council. Philadelphia: University of Pennsylvania Press. 68–94.

Sheiner, Louise and David N. Weil. 1993. "The Housing Wealth of the Aged." NBER Working Paper 4115.

Venti, Steven F. and David A. Wise. 1989a. "Aging, Moving, and Housing Wealth." In *The Economics of Aging,* ed. David A. Wise. Chicago: University of Chicago Press. 9–48.

———. 1898b. "But They Don't Want to Reduce Housing Equity." In *Issues in the Economics of Aging,* ed. David A. Wise. Chicago: University of Chicago Press. 13–29.

———. 1991. "Aging and the Income Value of Housing Wealth." *Journal of Public Economics* 44: 371–97.